



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,422	05/24/2006	Anne-Marie Caminade	1004900-000276	1713
21839	7590	07/09/2008	EXAMINER	
BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404				DOLLINGER, MICHAEL M
ART UNIT		PAPER NUMBER		
4171				
NOTIFICATION DATE			DELIVERY MODE	
07/09/2008			ELECTRONIC	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/580,422	CAMINADE ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	MICHAEL DOLLINGER	4171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 60-118 is/are pending in the application.
- 4a) Of the above claim(s) 92-118 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 60-91 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date ____ .	6) <input type="checkbox"/> Other: ____ .

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of Group I in the reply filed on June 9, 2008 is acknowledged. The traversal is on the ground(s) that (1) Groups I-VI relate to a single general inventive concept namely the dendritic polymers, (2) the unifying technical feature of the dendritic polymers is special because the prior art Matthews et al. (US 6,464,971 B1) does not meet each and every aspect of every claim of Group I, (3) the common technical feature of Groups IV and V is special because each and every permutation of the compound of formula (VIII) is not listed in the prior art Kagaku (JP 05 178 710), (4) all the claims were searched in the international phase of the application, and (5) the subject matter of Groups II and III overlaps because the Group III process is merely an optional final step in the Group II process. These arguments are not found persuasive because:

(1) Groups I-VI do not relate to a single generative concept as Examiner has shown that Groups IV and V do not make any limitations to a dendritic polymer. Furthermore,

Examiner has shown that the single generative inventive concept of Groups I-III and VI is not a special technical feature and the groups henceforth lack unity of invention.

(2) The prior does not need to meet each and every aspect of the claims of Group I to show lack of unity. The prior only needs to disclose the common technical feature shared by the groups. In the present application, that common technical feature is the dendritic polymer with phosphonic terminal groups which is shown in several embodiments in Matthews et al. (US 6,464,971 B1).

(3) The prior art does not need to disclose each and every permutation of a claimed compound to anticipate the claimed compound. Kagaku (JP 05 178 710) discloses a specific embodiment of formula (VIII) that is sufficient to anticipate it.

(4) The decision of the International Searching Authority on unity of invention has no bearing on the determination of unity of invention in the national stage application. Restriction is always optional and at the discretion of the acting examiner.

(5) The fact that the Group II and Groups III processes may be used in conjunction is not enough to establish unity of invention. The Group II and III processes are wholly different chemical processes that do not share common technical features.

The requirement is still deemed proper and is therefore made FINAL.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 70, 77, 80, 81 and 88-91 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding claims 70, 80 and 89-91, the multitude of variables and possible chemicals listed as suitable for each variable is so large and diverse that the scope of these claims becomes indefinite.

5. Claim 77 recites the limitation "R and R' have the meanings defined in claim 60" in Line 9. There is insufficient antecedent basis for this limitation in the claim. For

purposes of examination, Examiner takes the position that R and R' are as defined in claim 69 or claim 70.

6. Claim 81 recites the limitation "J and K" in Line 1. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination, Examiner takes the position that J and K are as defined in claim 80.

7. Claim 88 recites the limitation "-NRR" in Line 1. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination, Examiner takes the position that R and R' are as defined in claims 69 or 70.

8. Claim 89 recites the limitation "§,A, B, C, D, E, G, N, P, J, K, L, X, m, n, and < have the meanings defined above" in line 5. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination, Examiner takes the position that the variables are as defined in claims 60, 70 and 80.

9. Claim 90 recites the limitation "§, A', B', C, N, P, X, L", m, and n have the meanings defined above." in line 5. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination, Examiner takes the position that the variables are as defined in claims 60, 77 and 88.

10. Claim 90 recites the limitation "R" in line 3. There is insufficient antecedent basis for this limitation in the claim. For purposes of examination, Examiner takes the position that the variables are as defined in claims 69 or 70.

11. Claim 91 recites the limitation "§, A", P, X, L", m, and n have the meanings defined above." in line 5. There is insufficient antecedent basis for this limitation in the

claim. For purposes of examination, Examiner takes the position that the variables are as defined in claims 60, 78 and 88.

12. Examiner suggests that the claims be amended so that all the variables are clearly defined and the scope of all the claims is clearly defined as well. Examiner suggests that the dependency of the claims be amended in order to clearly define the variables or that the definitions of the variables be restated several times throughout the claims.

### ***Double Patenting***

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 60, 62-73, 75-78, 80-83 and 88 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims ,

55, 58, 59, 61-66, 68-70, 72, 75-77 and 80-84 of copending Application No. 10/580459.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the copending claims lies within the scope of the instant claims and so the copending claims anticipate the instant claims. It is clear that all the elements of the instant claims are to be found in the copending claims as the instant claims fully encompass the copending claims. The difference between the instant claims and the copending claims is that the copending claims contain more elements and thus outline a more specific invention. Thus the invention of the copending claims is in effect a "species" of the "generic" invention of the instant claims. It has been held that the generic invention is "anticipated" by the "species". See *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993). Since the instant claims are anticipated by the copending claims, they are not patentably distinct from the instant claims.

Instant claim	Corresponding Copending Claim
60	54
61	-
62	58
63	59
64	55
65	81
66	82
67	62
68	61
69	63
70	64
71	65
72	66
73	83
74	-
75	68
76	69
77	70
78	72
79	-
80	75
81	84
82	76
83	77
84	-
85	-
86	-
87	-
88	80
89	-
90	-
91	-

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102***

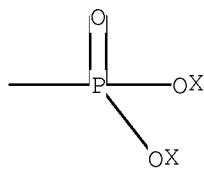
15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 60-63 and 65—91 are rejected under 35 U.S.C. 102(b) as being anticipated by Caminade et al. (WO 0053009). Please note that Caminade et al. (US 6,939,831 B1) is used as a translation to Caminade et al. (WO 0053009) according to MPEP 901.05 [R-3] III 4<sup>th</sup> paragraph.

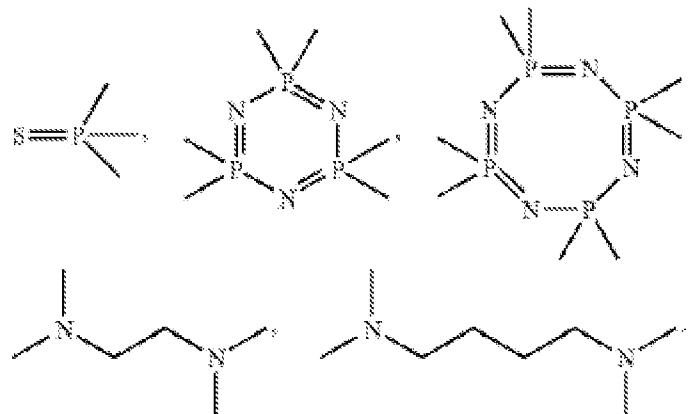
17. Regarding claim 60, applicants claim a dendritic polymer of generation 0 to 12 with a central core molecule of valence 3 to 8, optionally generation chains branching around the core, intermediate chains, and terminal groups at the end of each intermediate chains of the formula:



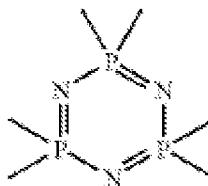
wherein each of the radicals X, which are identical or different, represent a radical -Me, -H and/or -M<sup>+</sup>, wherein M<sup>+</sup> is a cation. Caminade et al. disclose a dendritic polymer of one or more generations with core molecule of valence preferable between 3 and 10 (column 14 lines 43-48) wherein the core may be a hexachlorocyclotriphosphazene or

trichlorothiophosphane (column 15 lines 1-4), generation and intermediate chains, and with phosphonic type terminal groups (column 13 lines 1-3).

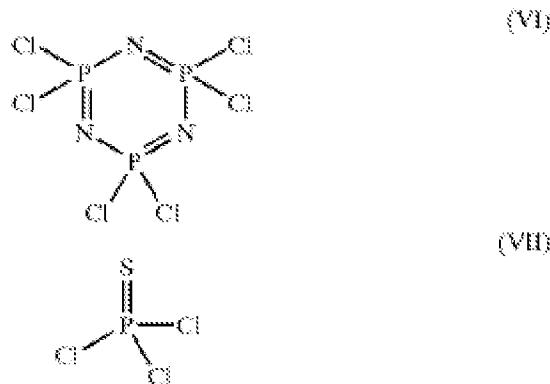
18. Regarding claims 61-63, applicants claim a dendritic polymer wherein the central core contains at least one phosphorous atom or is selected from the following groups:



preferably of the formula:



Caminade et al. disclose the central core of the dendritic polymer as hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4; Structures (VI) and (VII)):



19. Regarding claims 65 and 66, applicants claim a dendritic polymer wherein  $M^+$  is an element of group IA, IIA, IIB, or IIIA or further claim  $M^+$  is a sodium or potassium atom. Caminade et al. disclose the phosphonic terminated polymer dissolved in a solvent (column 19 lines 29-32) and in combination with an alkaline-earth metal salt (column 7 lines 31-34) or various sodium and potassium salts including Metam-sodium (column 8 line 45) and potassium hydroxyquinoline sulfate (column 8 lines 55-56). The combination of solvent and alkaline-earth, sodium, and potassium salts will effectively create some dendritic polymer with group IIA, sodium, and potassium as the  $M^+$  ions.

20. Regarding claim 67, applicants claim the dendritic polymer with 0 to 3 generations. Caminade et al. discloses intermediate products of dendrimers with 0 to 3 generations (column 5 lines 35-65).

21. Regarding claim 68, applicants claim the central core molecule of the dendritic polymer with a valence of 3, 4, or 6. Caminade et al. disclose the central core of the dendritic polymer as hexachlorocyclotriphosphazene which has a valence of 6 and trichlorothiophosphane which has a valence of 3.

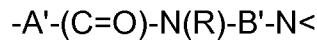
22. Regarding claims 69-91, applicants claim embodiments of the generation chains that are anticipated by Caminade et al. in the combinations of chemical motifs for the dendrons (column 16 lines 1-32).

23. Regarding claims 69-76, applicants claim generation branch compositions elected from linear or branched hydrocarbon chains having from 1 to 12 chain members wherein the generation chains are of the formula:



wherein in the most limited embodiments A represents an oxygen atom; B represents a substituted or unsubstituted phenyl ring; D represents a hydrogen atom; E represents a radical alkyl; and G represents a sulfur atom. Caminade et al. disclose the structure in FIG. (XI) (column 38) having the same formula as represented above wherein A is an oxygen atom; B is an aryl group namely phenylene; C is a carbon atom; D is an hydrogen atom; E is an alkyl radical namely methyl; and G is a sulfur atom.

24. Regarding claim 77, applicants claim the generation chains represented by the formula:



wherein A' and B' each independently of the other represents a radical -Alkyl, -Alkenyl, or -Alkynyl group. Caminade et al. disclose generation chains composed of acylaminoalkyl groups (column 16 line 8) substituted with amino (column 16 line 28) and alkyl groups (column 16 line 21).

25. Regarding claim 78, applicants claim the generation chains represented by the formula:

-A"-N<

wherein A" represents a radical -Alkyl, -Alkenyl, or -Alkynyl. Caminade et al. disclose generation chains composed of alkylamino groups (column 16 line 6).

26. Regarding claim 79, applicants claim the generation chains as identical. Caminade et al. disclose generation chains with chemical motifs that are in part identical to each other (column 15 lines 33-37).

27. Regarding claim 80 and 82-84, applicants claim the intermediate chains, which are identical or different, as represented by the formula:

-J-K-L-

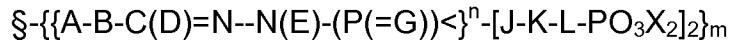
wherein J represents an oxygen atom, a sulfur atom or a radical -NR-; K represents a radical -Aryl-, -Heteroaryl-, or -Alkyl- and most limited to an unsubstituted phenyl; L represents a hydrocarbon chain having from 1 to 6 chain members optionally having one or more heteroatoms. Caminade et al. disclose the structure in FIG. (XI) (column 38) having the same formula as represented above wherein J is an oxygen atom; K is a radical aryl namely a phenylene group; and L is a four membered hydrocarbon chain with N and P heteroatoms.

28. Regarding claim 81, applicants claim the intermediate and generation chains wherein J and K are equal to A and B. The same elements of Figure (XI) of Caminade et al. anticipate both J and K, and A and B.

29. Regarding claim 85-88, applicants claim intermediate chains wherein L represents a radical -Alkyl-, -alkenyl- or -Alkynyl- group. Caminade et al. disclose the intermediate chains composed of aminoalkyl groups (column 16 line 6). Caminade et

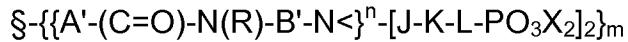
al. also disclose the structure in FIG. (XI) (column 38) wherein L is a substituted methylene group.

30. Regarding claim 89, applicants claim a dendritic polymer with a core, generation and intermediate chains, and phosphonic terminals in the formula:



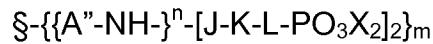
wherein all variables are as defined above. Caminade et al. disclose dendritic polymers with a core of hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4), generation or intermediate chains described in paragraphs 16 and 20-22 of this office action, and phosphonic terminals (column 13 lines 1-3) and phosphonium terminals (column 13 line 8).

31. Regarding claim 90, applicants claim a dendritic polymer with a core, generation and intermediate chains, and phosphonic terminals in the formula:



wherein all variables are as defined above. Caminade et al. disclose dendritic polymers with a core of hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4), generation or intermediate chains described in paragraphs 17 and 20-22 of this office action, and phosphonic terminals (column 13 lines 1-3) and phosphonium terminals (column 13 line 8).

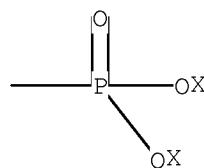
32. Regarding claim 91, applicants claim a dendritic polymer with a core, generation and intermediate chains, and phosphonic terminals in the formula:



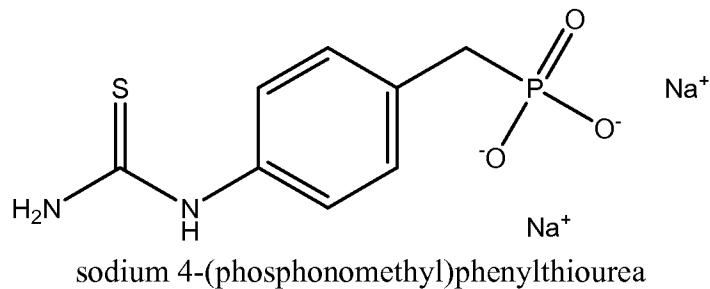
wherein all variables are as defined above. Caminade et al. disclose dendritic polymers with a core of hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4), generation or intermediate chains described in paragraphs 18 and 20-22 of this office action, and phosphonic terminals (column 13 lines 1-3) and phosphonium terminals (column 13 line 8).

33. Claims 60-62, 64-66, 68, 69 and 79 are rejected under 35 U.S.C. 102(b) as being anticipated by Matthews et al. (US 6,464,971 B1). In Example 24, Matthews et al. disclose a dendritic polymer having a PAMAM (4.0) (generation 4) structure with a core of ethylene diamine (column 22 line 42) having sodium (phosphonomethyl)phenylthiourea terminals (column 22 lines 39-40).

34. Regarding claim 60, applicants claim a dendritic polymer of generation 0 to 12 with a central core molecule of valence 3 to 8, optionally generation chains branching around the core, intermediate chains, and terminal groups at the end of each intermediate chains of the formula:

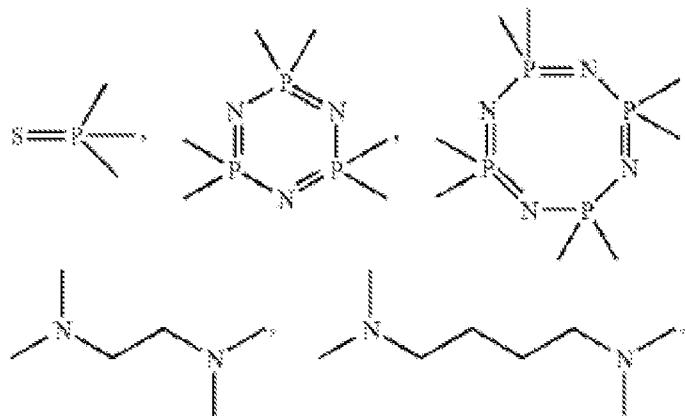


wherein each of the radicals X, which are identical or different, represent a radical -Me, -H and/or -M<sup>+</sup>, wherein M<sup>+</sup> is a cation. The dendritic polymer of Example 24 of Matthews et al. is of generation 4, with a central core molecule of valence of 4, generation/intermediate chains, terminal groups of the formula:



wherein X is a  $\text{Na}^+$  ion.

35. Regarding claims 61 and 62, applicants claim a dendritic polymer wherein the central core contains at least one phosphorous atom or is selected from the following groups:



The dendritic polymer of Example 24 of Matthews et al. has ethylene diamine (EDA) as the central core molecule (column 22 line 42).

36. Regarding claim 64, applicants claim a dendritic polymer with a DAB-AM, PAMAM, or PMMH structure. The dendritic polymer of Example 24 of Matthews et al. has a PAMAM structure.

37. Regarding claims 65 and 66, applicants claim a dendritic polymer wherein  $M^+$  is an element of group IA, IIA, IIB, or IIIA or further claim  $M^+$  is a sodium or potassium atom. The dendritic polymer of Example 24 of Matthews et al. has  $Na^+$  for  $M^+$ .
38. Regarding claim 68, applicants claim a dendritic polymer with a central core molecule with valence of 3, 4, or 6. The dendritic polymer of Example 24 of Matthews et al. has a core of EDA which has a valence of 4.
39. Regarding claim 69, applicants claim a dendritic polymer with generation chains which are linear or branched hydrocarbon chains having from 1 to 12 chain members which may be heteroatoms and optionally substituted. The polymers of Example 24 of Matthews et al. have PAMAM structure which has a generation chain that is a seven membered hydrocarbon with two nitrogen heteroatoms.
40. Regarding claims 77, 78, 88, 90 and 91, applicants claim formulae of the dendritic polymer generation and intermediate branches that applicants have admitted are commercially available and anticipated by PAMAM dendritic polymers (page 17 2<sup>nd</sup> paragraph of specification). Henceforth the dendritic polymer of Example 24 of Matthews et al., being of PAMAM structure and having phosphonic terminals, anticipates these claims.
41. Regarding claim 79, applicants claim a dendritic polymer wherein the generation chains are identical. The polymers of Example 24 of Matthews et al. have PAMAM structure which has identical generation chains.

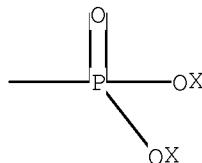
***Claim Rejections - 35 USC § 103***

42. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

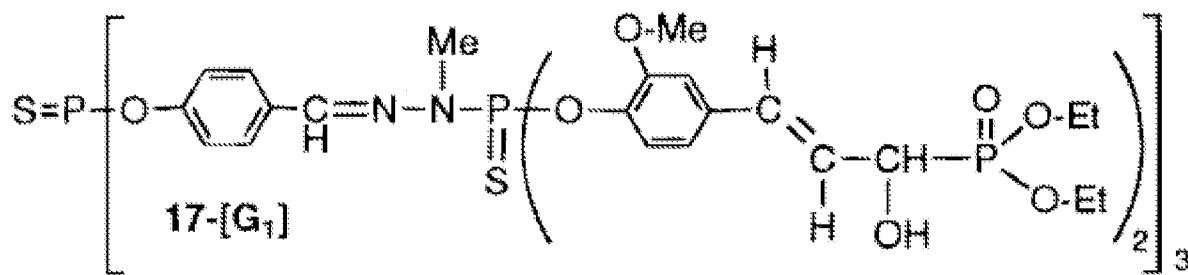
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

43. Claims 60-62, 67-76, 79, 80, 82, 83, 85, 86 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prévôté et al. ("Phosphate-, Phosphite-, Ylide-, and Phosphonate-Terminated Dendrimers." J. Org. Chem. 1997, 62, 4834-4841.).

44. Regarding claim 60, applicants claim a dendritic polymer of generation 0 to 12 with a central core molecule of valence 3 to 8, optionally generation chains branching around the core, intermediate chains, and terminal groups at the end of each intermediate chains of the formula:

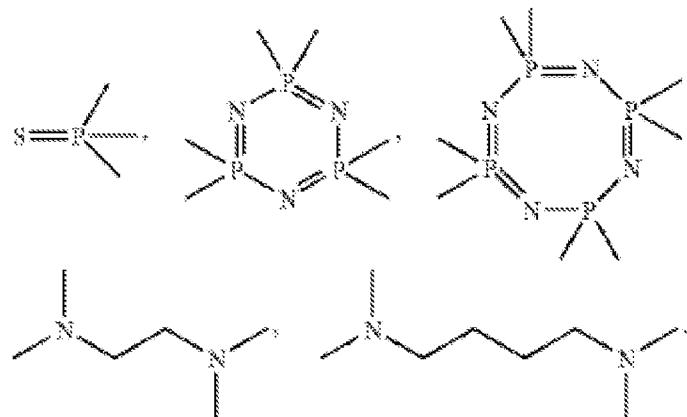


wherein each of the radicals X, which are identical or different, represent a radical -Me, -H and/or -M<sup>+</sup>, wherein M<sup>+</sup> is a cation. Prévôté et al. disclose a dendritic polymer 17-[G<sub>1</sub>] of generation 1 with a core molecule valence of 3, generation and intermediate chains, and terminal P(=O)(OEt)<sub>2</sub> terminal groups (Scheme 8 page 4838). The dendritic polymer is of the formula:



17-[G<sub>1</sub>].

45. Regarding claims 61 and 62, applicants claim a dendritic polymer wherein the central core contains at least one phosphorous atom or is selected from the following groups:



The dendritic polymer 17-[G<sub>1</sub>] has a core molecule of S≡P≡.

46. Regarding claim 67, applicants claim a dendritic polymer of generation 0 to 3.

The dendritic polymer 17-[G<sub>1</sub>] is generation 1.

47. Regarding claim 68, applicants claim a dendritic polymer with a core with valence 3, 4 or 6. The dendritic polymer 17-[G<sub>1</sub>] has a core with valence 3.

48. Regarding claims 69-76, applicants claim generation branch compositions elected from linear or branched hydrocarbon chains having from 1 to 12 chain members wherein the generation chains are of the formula:



wherein in the most limited embodiments A represents an oxygen atom; B represents a substituted or unsubstituted phenyl ring; D represents a hydrogen atom; E represents a radical alkyl; and G represents a sulfur atom. Prévôté et al. disclose the structure in 17[G<sub>1</sub>] having the same formula as represented above wherein A is an oxygen atom; B is an aryl group namely phenylene; C is a carbon atom; D is an hydrogen atom; E is an alkyl radical namely methyl; and G is a sulfur atom.

49. Regarding claim 79, applicants claim a dendritic polymer having identical generation chains. The dendritic polymer 17-[G<sub>1</sub>] of Prévôté et al. has identical generation chains.

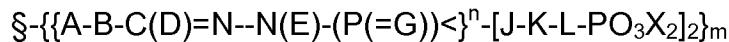
50. Regarding claim 80, 82, 83, 85 and 86, applicants claim the intermediate chains, which are identical or different, as represented by the formula:



wherein J represents an oxygen atom, a sulfur atom or a radical -NR- and is most limited to an oxygen atom; K represents a radical -Aryl-, -Heteroaryl-, or -Alkyl- and most limited to a phenyl group; L represents a hydrocarbon chain having from 1 to 6 chain members optionally having one or more heteroatoms and most limited to a radical alkenyl optionally substituted by a radical -OH. The dendritic polymer 17-[G<sub>1</sub>] of Prévôté et al. has intermediate chains that follow the above formula wherein J is an

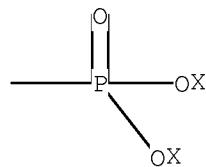
oxygen atom; K is a radical aryl namely a phenylene group; and L is butenylene substituted with a radical -OH.

51. Regarding claim 89, applicants claim a dendritic polymer with a core, generation and intermediate chains, and phosphonic terminals in the formula:



wherein all variables are as defined above. The dendritic polymer 17-[G<sub>1</sub>] of Prévôté et al. has a core of S≡P≡, generation or intermediate chains described in paragraphs 40 and 42 of this office action, and phosphonic terminals.

52. Prévôté et al. do not explicitly disclose a dendritic polymer with terminal groups at the end of the intermediate chains of the formula:



wherein each of the radicals X, which are identical or different, represent a radical -Me, -H and/or -M<sup>+</sup>, wherein M<sup>+</sup> is a cation. However, it would have been obvious to one having ordinary skill in the art at the time of applicants' invention to have used a radical Me group at the X position in place of an -Et group at the X position. The -Me and -Et groups are functionally equivalent; this is simple substitution of one known, equivalent element for another to obtain predictable results. Absent any evidence to the contrary, there would have been a reasonable expectation of success of switching a -Me group

for an -Et group in phosphonic terminals of a dendritic polymer and obtaining a final dendritic polymer with equivalent functionality.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL DOLLINGER whose telephone number is (571)270-5464. The examiner can normally be reached on Monday - Thursday 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 4171

MICHAEL DOLLINGER  
Examiner  
Art Unit 4171

/MMD/